A new Figure 4 is submitted herewith for the Examiner's approval.

- REMARKS -

The Applicant would like to thank the Examiner for the interview of September 12, 2002.

The Applicant has amended the application in accordance with the agreement reached during the interview with the Examiner. Reference numeral "34" in Figure 1 indicating a "Graphics Device Driver" has been amended to "31". No changes were necessary to the specification in order to be consistent with amended Figure 1.

Regarding support for "blend and overlay" as included within claim 1, support for both blending and overlaying is found in Figure 4 of Applicants' co-pending application 09/526,440, the specification of which was incorporated by reference in the present application as filed (referred to in the original specification on page 1 as commonly assigned application filed simultaneously with the present application and bearing docket number 10442-6US). Page 1 of the specification has been amended to refer to this co-pending application by its serial number. Figure 4 from the '440 application is submitted herewith for entry in this application, and the present specification is also amended to include the brief description of Figure 4 and the detailed description of Figure 4 from the '440 application. No new subject matter is entered by way of the present amendment. Claim 1 has been amended to define "at least one of blending and overlaying" instead of "blend and/or overlay".

Claim 1 stands rejected under 35USC§103 in view of Ranganathan.

U.S patent 5,764,201 to Ranganathan concerns a display control system connected to a portable computer and a CRT display. In this particular system, graphics pixels stored in memory are transmitted to either one of two paths according to their format;

the first path is dedicated to RGB graphics pixels whereas the second one handles movie-overlay pixels in YUV format. The above-mentioned pixels are then channeled by two pixel muxes to either one of two other paths; the first path drives the portable computer's LCD screen whereas the second path drives the CRT display. The dual display controller offers several modes of operation; the pixel muxes can be programmed to work in simultaneous, dual, or reverse dual mode. When operating in simultaneous mode, both pixel muxes switch to select movie pixels from the YUV path in order to display, on both output devices, a full screen of graphics pixels, a full screen of video pixels, or a graphics screen with a smaller window of movie pixels. As for the dual mode, the screens display two different images; the graphics pixels are displayed on the LCD panel while the movie pixels are displayed on the CRT screen. Finally, reverse dual mode is very similar to dual mode, except that graphics pixels are displayed on the CRT screen while movie pixels are displayed on the LCD panel (see Figure 6 of U.S patent No. 5,764,201 for a detailed system diagram).

The dual-path graphics controller of Ranganathan cannot display a YUV format video in a window overlaid on a desktop on one output device, while displaying YUV format video in a window overlaid on a desktop on another output device. As mentioned in the description of Ranganathan, when the dual-path graphics controller is displaying two different images on the output screens, each screen is exclusively dedicated to a certain pixel format according to the operating dual mode. In other words, as stated in U.S patent No. 5,764,201, column 7, lines 63-65, the "image cannot be a combination of a smaller movie window on a graphics background unless additional logic is added" (emphasis added). According to the technical resources provided by Ranganathan, the "additional logic" required by the dual-path graphics controller is a second YUV path comprising a scaler unit. However, Ranganathan does not disclose nor suggest the addition of a second display controller within a display controller system wherein both controllers have blending and overlaying capability of both YUV and RGB surfaces.

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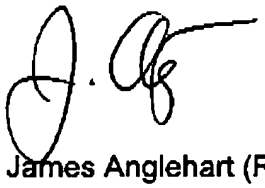
Ranganathan also suggests, at column 12, lines 13 to 22, to provide multiple overlays within a single controller by the addition of additional logic or re-use of the existing logic. Likewise, such additional logic could be an additional YUV path so that a mux could overlay two YUV windows over the RGB graphics. Again, however, Ranganathan does not disclose nor suggest the addition of a second display controller within a display controller system wherein both controllers have blending and overlaying capability of both YUV and RGB surfaces.

In view of the foregoing, a Notice of Allowance for claims 1-7 is respectfully requested.

Respectfully submitted,
Kamran AHMED

By: 

James Anglehart (Reg. 38,796)

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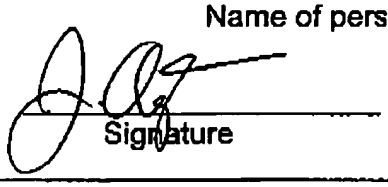

Signature

December 3, 2002
Date

Marked up copy of specification changes in accordance with 37CFR§1.121(c)(ii)

Page 1, line 4

This application is related to ~~a~~ commonly assigned co-pending application serial number 09/526,440 filed ~~simultaneously herewith (docket number 10442-6US) entitled~~March 16, 2000 entitled "MULTIPLE DISPLAY DEVICE DISPLAY CONTROLLER WITH VIDEO OVERLAY AND FULL SCREEN VIDEO OUTPUTS", the specification of which is hereby incorporated by reference.

Page 2, line 13

According to the invention, there is provided a method of providing a display output for at least two display devices using a single controller system. The method comprises:

providing a first display controller able to read from a graphics memory at least two first surfaces into at least two first pixel paths, convert the pixel format of at least one of the at least two first surfaces, scale at least one of the at least two first surfaces, and combine (~~blend and/or overlay~~ at least one of blending and overlaying) the at least two first surfaces, where at least one of the first pixel paths supports any one of RGB and YUV pixel format and at least one of the pixel paths supports at least RGB pixel format; providing a second display controller able to read from a graphics memory at least two second surfaces, convert the pixel format of at least one of the at least two second surfaces, scale at least one of the at least two second surfaces, and combine the at least two second surfaces, where at least one of the pixel paths supports any one of RGB and YUV pixel formats and at least one of the pixel paths supports at least an RGB pixel format;

causing the first display controller to select and read the first surfaces, convert the first surfaces into a like first format at least when the first surfaces are not all in the like first format, scaling at least one of the first surfaces, combining (~~blend and/or overlay~~ at least one of blending and overlaying) the first surfaces to obtain a blended first surface, and outputting the combined first surface to provide a first output stream of pixel data;

causing the second display controller to select and read the second surfaces, convert the second surfaces into a like second format at least when the second

surfaces are not in the like second format, scaling at least one of the second surfaces, combining (~~blend and/or overlay~~ at least one of blending and overlaying) the second surfaces to obtain a blended second surface, and outputting the combined second surface to provide a second output stream of pixel data. In this way, flexibility is provided by selection of the first and second surfaces as well as scaling and combining of the first and second surfaces, whether the surfaces are in RGB format, YUV format or mixed RGB/YUV format. It will be appreciated that any of the surfaces could be common between the two controllers. This enables the same surface to be displayed on the two displays in different ways, formats and blended with different surfaces.

Page 6, line 22

Fig. 1 is a schematic block diagram of a single controller system for providing dual display output according to the preferred embodiment; ~~and~~

Page 6, line 24

Fig. 2 is a schematic block diagram of a controller reading two surfaces of any of a plurality of video formats, carrying out conversion, if necessary, and scaling and combining (overlaying and/or blending) in accordance with the preferred embodiment; ~~and~~

Page 6, line 28

Fig. 3 is a pictoral diagram of two different surfaces in graphics memory showing the result of combining with sub-picture blending and overlaying; and ~~.~~

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Marked up copy of claims in accordance with 37CFR§1.121(c)(ii)

1.(amended) A method of providing a display output for at least two display devices using a single graphic controller system, the method comprising:

providing a first display controller able to read from a graphics memory at least two first surfaces into at least two pixel paths , convert at least one of the at least two first surfaces, scale at least one of the at least two first surfaces, and ~~combine (blend and/or overlay~~ at least one of blend and overlay~~)~~ the at least two first surfaces, said first surfaces containing any one of RGB and YUV format video ;

providing a second display controller able to read from a graphics memory at least two second surfaces into at least two pixel paths, convert at least one of the at least two second surfaces, scale at least one of the at least two second surfaces, and ~~combine (blend and/or overlay~~ at least one of blend and overlay~~)~~ the at least two second surfaces, said second surfaces containing any one of RGB and YUV format video;

causing said first display controller to select and read said first surfaces, convert said first surfaces into a like first format at least when said first surfaces are not all in said like first format, scaling at least one of said first surfaces, ~~combining~~ at least one of blending and overlaying said first surfaces to obtain a combined first surface, and outputting said combined first surface to provide a first output stream of pixel data;

causing said second display controller to select and read said second surfaces, convert said second surfaces into a like second format at least when said second surfaces are not in said like second format, scaling at least one of said second surfaces, ~~combining~~ at least one of blending and overlaying said second surfaces to obtain a combined second surface, and outputting said combined second surface to provide a second output stream of pixel data,

whereby flexibility is provided by selection of said first and second surfaces as well as scaling and blending of said first and second surfaces, whether said surfaces are in RGB format, YUV format or mixed RGB/YUV format.

Approved
LB 1/08/03

Marked up copy of drawing changes in accordance with 37CFR§1.121(c)(ii)

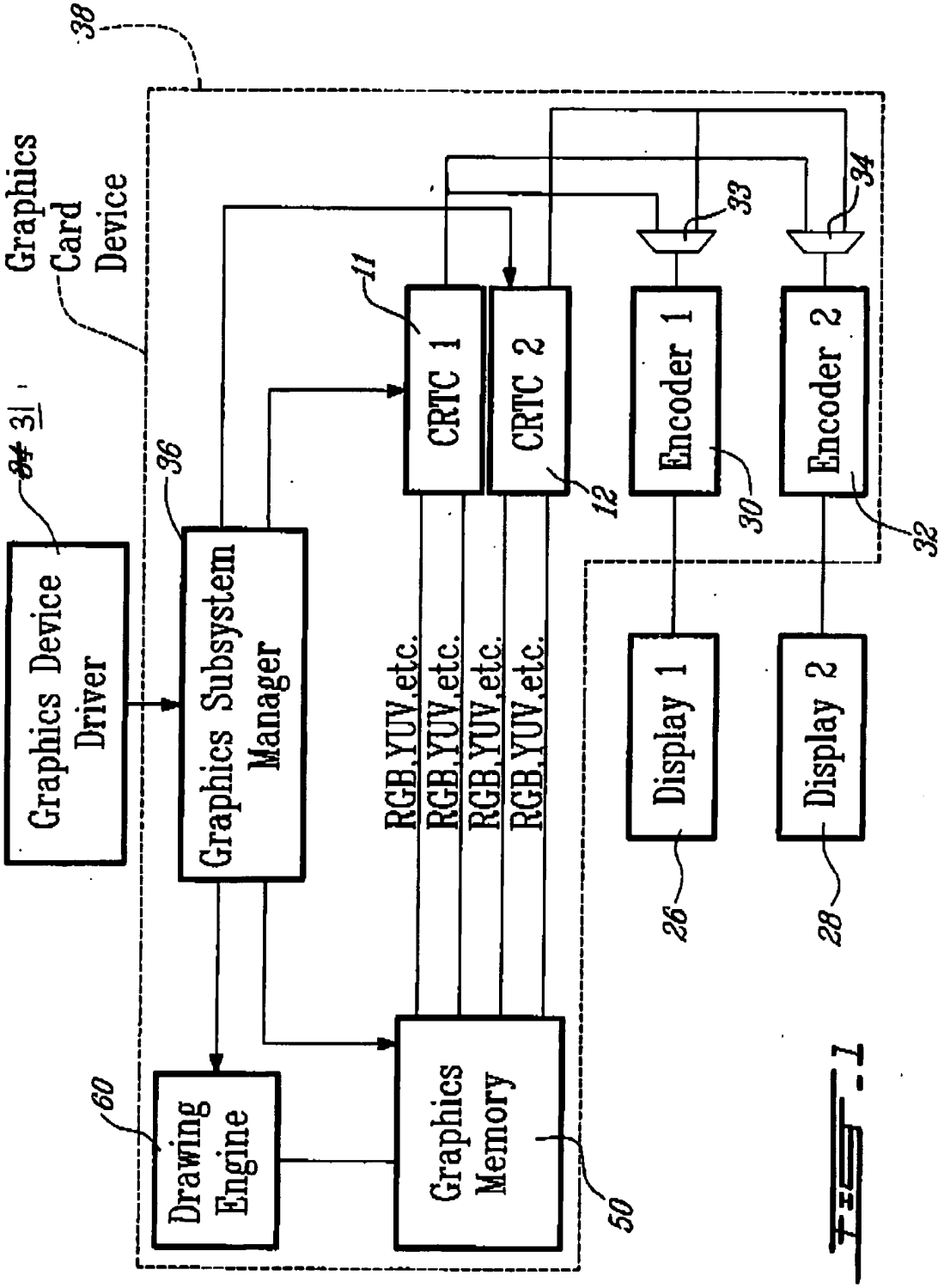

Fig. 1